UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/563,679	06/09/2006	John Christopher Rudin	200300815-4	1520

22879 7590 12/29/2008

HEWLETT PACKARD COMPANY
P O BOX 272400, 3404 E. HARMONY ROAD
INTELLECTUAL PROPERTY ADMINISTRATION
FORT COLLINS, CO 80527-2400

EXAMINER	
GARRITY, DIANA C	

ART UNIT	PAPER NUMBER
2814	

NOTIFICATION DATE	DELIVERY MODE
12/29/2008	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

JERRY.SHORMA@HP.COM
mkraft@hp.com
ipa.mail@hp.com

Office Action Summary	Application No.	Applicant(s)	
	10/563,679	RUDIN, JOHN CHRISTOPHER	
	Examiner	Art Unit	
	DIANA C. GARRITY	2814	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 September 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-9,12-18,21,22,25 and 26* is/are pending in the application.

4a) Of the above claim(s) *13-18,21 and 22* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-9,12,25 and 26* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Status of Claims

1. Amendment filed September 26, 2008 is acknowledged.

- Claims 10-11, 19-20, 23-24 have been cancelled.
- Claims 1-9, 12-18, 21-22, and 25-26 are pending.
  - Claims 13-18 and 21-22 have been withdrawn from consideration.
  - Claims 4 and 9 have been amended.
  - Claims 1-9, 12, and 25-26 are examined below.
    - Claims 1-9, 12, and 25-26 are rejected.

Response to Arguments

2. Applicant's arguments filed September 26, 2008 have been fully considered but they are not persuasive.

Applicant states:

> More specifically, the Office Action all but admits that *Shi* fails to disclose this element by reading the "upper half" of 75 as the first metal portion of the metallic source electrode and the "lower half" of element 75 as the second metal portion of the metallic source electrode (with similar analysis for element 76) (OA page 5, first and second paragraphs). However, this is an incorrect inference. Referring to FIG. 7, conductive strips 75 and 76 are single piece elements and thus are part of only one layer. Consequently, an arbitrary division of these elements in an "upper half" and a "lower half" cannot be read on "***a second layer comprising a second metal portion of the metallic source electrode, a second metal portion of the metallic drain electrode***" as recited in Claim 1. For at least this reason, claim 1 is allowable," (emphasis in original).

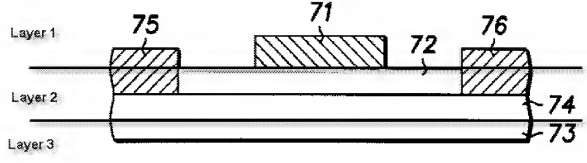
The expression

> "Referring to FIG. 7, conductive strips 75 and 76 are single piece elements and thus are part of only one layer," (Remarks, page 10),

is/are taken to be a product by process limitation and is given no patentable weight. Product by process claim directed to the product per se, no matter now actually made, *In re Hirao*, 190 USPQ 15 at 17 (footnote 3). See *In re Fessman*, 180 USPQ 324, 326 (CCPA 1974); *In re Marosi et al.*, 218 USPQ 289, 292 (Fed. Cir. 1983); *In re Brown*, 459 F.2d 531, 535, 173 USPQ 685, 688 (CCPA 1972); *In re Pilkington,* 411 F.2d 1345, 1348, 162 USPQ 145, 147, (CCPA 1969); *Buono v. Yankee Maid Dress Corp.,* 77F.2d 274, 279, 26 USPQ 57, 61 (2d. Cir. 1935); and particularly *In re Thorpe*, 227 USPQ 964, 966 (Fed. Cir. 1985), all of which make it clear that it is the patentability of the final structure of the product "gleaned" from the process steps which must be determined in a "product by process" claim, and not the patentability of the process. See also MPEP 2113. Moreover, an old and obvious patent produced by a new method is not a patentable product, whether claimed in "product by process" claims or not.

Note that Applicant has burden of proof in such cases as the above case law makes clear.

Further, the claim language refers to a transistor device, regardless of the process by which the device was made (see above). The final product, thus, can be divided according to the layers 72, 73, and 74, as seen below in the annotated reproduction of Figure 7:



Here, Layer 1 comprises the metallic gate electrode, a first metal portion of the metallic source electrode, and a first metal portion of the metallic drain electrode.

Layer 2 comprises a second metal portion of the metallic source electrode, a second metal portion of the metallic drain electrode, the deposited semiconductor material, and a dielectric material between the semiconductor material and the metallic gate electrode.

Layer 3 comprises a substrate.

Thus, applicant's arguments concerning claims 1 and 25 are not persuasive.

Specification

3. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: Thin-film transistor includes metallic source, drain, and gate electrodes, with substrate adhered to semiconductor layer and metallic source and drain electrodes.

Claim Rejections - 35 USC § 102

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

4. Claims 1-9, 25 and 26 are rejected under 35 U.S.C 102(b) as being anticipated by Shi et al. (US 6,326,640; hereinafter "Shi").

Regarding claim 1, Shi (Figure 7) teaches a transistor device having a metallic source electrode, a metallic drain electrode, a metallic gate electrode and a channel in a deposited semiconductor material, the transistor device comprising:

a first layer comprising the metallic gate electrode (71), a first metal portion of the metallic source electrode (75, upper half), and a first metal portion of the metallic drain electrode (76, upper half);

a second layer comprising a second metal portion of the metallic source electrode (75, lower half), a second metal portion of the metallic drain electrode (76, lower half), the deposited semiconductor material (74) and dielectric material (72) between the semiconductor material and the metallic gate electrode; and

a third layer comprising a substrate (73), wherein the first, second, and third layers are arranged in an order such that the second layer is positioned between the first layer and the third layer.

Regarding claim 2, The expression "the metallic source electrode, drain electrode, and gate electrode comprising electro-deposited metal" is/are taken to be a product by process limitation and is given no patentable weight. Product by process claim directed to the product per se, no matter now actually made, *In re Hirao*, 190 USPQ 15 at 17 (footnote 3). See *In re Fessman*, 180 USPQ 324, 326 (CCPA 1974); *In re Marosi et al.*, 218 USPQ 289, 292 (Fed. Cir. 1983); *In re Brown*, 459 F.2d 531, 535, 173 USPQ 685, 688 (CCPA 1972); *In re Pilkington,* 411 F.2d 1345, 1348, 162 USPQ 145, 147, (CCPA 1969); *Buono v. Yankee Maid Dress Corp.,* 77F.2d 274, 279, 26 USPQ 57, 61 (2d. Cir. 1935); and particularly *In re Thorpe*, 227 USPQ 964,

966 (Fed. Cir. 1985), all of which make it clear that it is the patentability of the final structure of the product "gleaned" from the process steps which must be determined in a "product by process" claim, and not the patentability of the process. See also MPEP 2113. Moreover, an old and obvious patent produced by a new method is not a patentable product, whether claimed in "product by process" claims or not.

Note that Applicant has burden of proof in such cases as the above case law makes clear.

Regarding claim 3, Shi teaches the first, second, and third layers are each of respective substantially uniform thickness (Figure 7 – the three layers are generally the same thickness as shown in the drawing).

Regarding claim 4, Shi teaches that the third layer includes adhesive bonding the substrate to the transistor device (the second layer is attached to the third).

Regarding claim 5, Shi teaches the first layer has a substantially planar surface (See Figure 7, it is substantially planar) comprising substantially planar portions of the source (75), drain (76) and gate (71) electrodes.

Regarding claim 6, Shi teaches the deposited semiconductor material (74) comprises organic semiconductor material.

Regarding claim 7, The expression "the deposited semiconductor material comprises indications that it was deposited from a liquid" is/are taken to be a product by process limitation and is given no patentable weight. Product by process claim directed to the product per se, no matter now actually made, *In re Hirao*, 190 USPQ 15 at 17 (footnote 3). See *In re Fessman*, 180 USPQ 324, 326 (CCPA 1974); *In re Marosi et al.*, 218 USPQ 289, 292 (Fed. Cir. 1983); *In re Brown*, 459 F.2d 531, 535, 173 USPQ 685, 688 (CCPA 1972); *In re Pilkington,* 411 F.2d 1345, 1348, 162 USPQ 145, 147, (CCPA 1969); *Buono v. Yankee Maid Dress Corp.,* 77F.2d 274, 279, 26 USPQ 57, 61 (2d. Cir. 1935); and particularly *In re Thorpe*, 227 USPQ 964, 966 (Fed. Cir. 1985), all of which make it clear that it is the patentability of the final structure of the product "gleaned" from the process steps which must be determined in a "product by process" claim, and not the patentability of the process. See also MPEP 2113. Moreover, an old and obvious patent produced by a new method is not a patentable product, whether claimed in "product by process" claims or not.

Note that Applicant has burden of proof in such cases as the above case law makes clear.

Regarding claim 8, Shi teaches the semiconductor material (74) is embedded in the device and overlain by the gate electrode (71).

Regarding claim 9, Shi teaches insulating material (air/physical distance) separating the gate electrode (71) from the source and drain electrode (75 and 76).

Regarding claim 25, Shi teaches a transistor having a metallic source electrode, a metallic drain electrode, a metallic gate electrode and a channel in a deposited semiconductor material, the transistor device comprising:

a first upper planar layer comprising the metallic gate electrode (71), a first metal portion of the metallic source electrode (75, upper half), and a first metal portion of the metallic drain electrode (76, upper half);

a second middle planar layer comprising a second metal portion of the metallic source electrode (75, lower half), a second metal portion of the metallic drain electrode (76, lower half), the deposited semiconductor material (74) and dielectric material (72) between the semiconductor material and the metallic gate electrode; and

a third lower planar layer comprising a substrate (73), wherein fist, second and third planar layers are arranged in order such that the second middle layer is positioned between the first upper layer and the third lower layer,

the gate electrode (71) occupies only the first upper planar layer and the channel (74) occupies only the second middle planar layer, the metallic source electrode (75) consists of the first metal portion of the metallic source electrode overlying the second metal portion of the metallic source electrode, and the metallic drain electrode (76) consists of the first metal portion of the metallic drain electrode overlying the second metal portion of the metallic drain electrode.

The expression "the metallic source electrode, drain electrode and gate electrode comprise electro-deposited metal" is/are taken to be a product by process limitation and is given no patentable weight. Product by process claim directed to the product per se, no matter now

actually made, *In re Hirao*, 190 USPQ 15 at 17 (footnote 3). See *In re Fessman*, 180 USPQ 324, 326 (CCPA 1974); *In re Marosi et al.*, 218 USPQ 289, 292 (Fed. Cir. 1983); *In re Brown*, 459 F.2d 531, 535, 173 USPQ 685, 688 (CCPA 1972); *In re Pilkington,* 411 F.2d 1345, 1348, 162 USPQ 145, 147, (CCPA 1969); *Buono v. Yankee Maid Dress Corp.,* 77F.2d 274, 279, 26 USPQ 57, 61 (2d. Cir. 1935); and particularly *In re Thorpe*, 227 USPQ 964, 966 (Fed. Cir. 1985), all of which make it clear that it is the patentability of the final structure of the product "gleaned" from the process steps which must be determined in a "product by process" claim, and not the patentability of the process. See also MPEP 2113. Moreover, an old and obvious patent produced by a new method is not a patentable product, whether claimed in "product by process" claims or not.

Note that Applicant has burden of proof in such cases as the above case law makes clear.

Regarding claim 26, Shi teaches the metallic gate electrode (71) contacts the dielectric material (72).

The expression "the metallic source, gate and drain electrodes consist entirely of electro-deposited metal" is/are taken to be a product by process limitation and is given no patentable weight. Product by process claim directed to the product per se, no matter now actually made, *In re Hirao*, 190 USPQ 15 at 17 (footnote 3). See *In re Fessman*, 180 USPQ 324, 326 (CCPA 1974); *In re Marosi et al.*, 218 USPQ 289, 292 (Fed. Cir. 1983); *In re Brown*, 459 F.2d 531, 535, 173 USPQ 685, 688 (CCPA 1972); *In re Pilkington,* 411 F.2d 1345, 1348, 162 USPQ 145, 147, (CCPA 1969); *Buono v. Yankee Maid Dress Corp.,* 77F.2d 274, 279, 26 USPQ 57, 61 (2d. Cir. 1935); and particularly *In re Thorpe*, 227 USPQ 964, 966 (Fed. Cir. 1985), all of which make it

clear that it is the patentability of the final structure of the product "gleaned" from the process steps which must be determined in a "product by process" claim, and not the patentability of the process. See also MPEP 2113. Moreover, an old and obvious patent produced by a new method is not a patentable product, whether claimed in "product by process" claims or not.

Note that Applicant has burden of proof in such cases as the above case law makes clear.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shi ('640).

Regarding claim 12, Shi teaches the device of claim 1. It would have been obvious to one of ordinary skill in the art at the time of the invention to construct a plurality of these transistors on a single substrate for lower cost of mass production. It is well known in the art to construct more than one transistor on a single substrate, and then singulate respective transistors for individual use.

Conclusion

6. THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to DIANA C. GARRITY whose telephone number is (571) 270-5026. The examiner can normally be reached on Monday-Friday 7:00 AM - 3:30 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Anh Mai can be reached on (571) 272-1710. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Diana C Garrity/
Examiner, Art Unit 2814

/Anh D. Mai/
Primary Examiner, Art Unit 2814